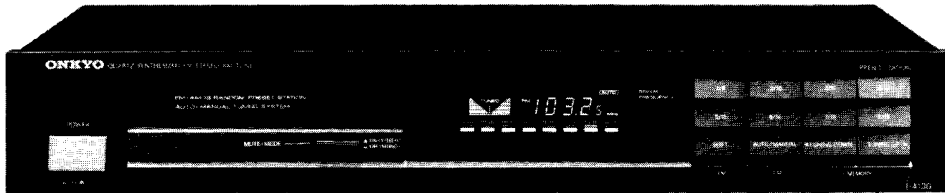


# ONKYO SERVICE MANUAL

## SYNTHESIZED FM STEREO/AM TUNER MODEL T-4130



Black model

BUD, BUDN	120V AC, 60Hz
BUG	220V AC, 50Hz
BUW	120V/220V AC, 50/60Hz
BUQA	240V AC, 50Hz

### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  $\Delta$  ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

## TABLE OF CONTENTS

Specifications	2
Service procedures	2
Block diagram	3
Exploded view	4
Parts list	5
Circuit description	6
Block diagram of IC	8
Packing view	10
Adjustment procedures	12
Pc board view/parts list	
Display/Switch	14
Main circuit view	14
Main circuit parts list	19
Schematic diagram	15

**ONKYO**  
**AUDIO COMPONENTS**

# SPECIFICATIONS

<b>FM:</b>	1 20V model	Other models
Tuning Range:	87.9-107.9MHz(200kHz steps)	87.5-108.0MHz(50kHz, steps)
Usable Sensitivity:	Mono: 11.2dBf, 2.0 $\mu$ V,IHF Stereo: 17.2dBf, 4.0 $\mu$ V	11.2 dBf, 1.0 $\mu$ V, IHF, 0.9 $\mu$ V, 75ohms DIN 2.0 $\mu$ V 75ohm
50dB Quieting Sensitivity:	Mono: 16.1dBf, 3.5 $\mu$ V Stereo: 36.1dBf, 35 $\mu$ V	1.7 $\mu$ V 75ohm 17 $\mu$ V 75ohm
Capture Ratio:	1.5dB	1.5dB
Image Rejection Ratio:	40dB	80dB
IF Rejection Ratio:	90dB	90dB
Signal-to-Noise Ratio:	Mono: 73dB Stereo: 66dB	Mono: 73dB Stereo: 66dB
ACA:	50dB IHF( $\pm$ 400kHz)	
Selectivity:		55dB DIN( $\pm$ 300kHz, 40kHz devi.)
AM Suppression Ratio:	50dB	50dB
Harmonic Distortion:	Mono: 0.1% Stereo: 0.2%	Mono: 0.1% Stereo: 0.2%
Frequency Response:	30-15,000Hz $\pm$ 1.5dB	30-15,000Hz $\pm$ 1.5dB
Stereo Separation:	40dB at 1kHz 30dB at 70-10,000Hz	40dB at 1kHz 30dB at 70-10,000Hz
Output voltage:	500mV	750mV
Muting level:	17.2dBf, 4 $\mu$ V	2 $\mu$ V, 75ohm
<b>AM:</b>		
Tuning Range:	530-1,620kHz(10kHz steps)	522-1,611kHz(9kHz steps)
Usable Sensitivity:	25 $\mu$ V	25 $\mu$ V
Image Rejection Ratio:	40dB	40dB
IF Rejection Ratio:	30dB	30dB
Signal-to-Noise Ratio:	40dB	40dB
Harmonic Distortion:	0.8%	0.8%
Output voltage:	150mV	150mV
<b>GENERAL:</b>		
Dimensions(W $\times$ H $\times$ D):	435 $\times$ 71 $\times$ 268mm 17-1/8" $\times$ 2-13/16" $\times$ 10-9/16"	
Weight:	3.0kg., 6.6lbs.	

Specifications and features are subject to change without notice.

## SERVICE PROCEDURES

### 1.Safety-check out

(Only U.S.A. model)

After correcting the original service problem,perform the following safety check before releasing the set to the customer.

Connect the insulating-resistance tester between the plug of power suuply cord and chassis.

Specifications: 3.3Mohm  $\pm$ 10% at 500V.

### 2.Memroy preservation

This unit does not require memory preservation batteries.

A built-in memory power back-up system preserves contents of the memory during power failures and even when the unit is unplugged. The unit must be plugged in and the power switch turned on and off once in order to charge the back-up system. Note that since this is not a permanent memory,the power switch must be turned on and off a few times each month to keep the back-up system operative.

The period of time during which memory contents are preserved after power has last been turned off varies depending on climate and placement of the unit.

On the average, memory contents are protected over a period of 3 to 4 weeks (a minimum of 2 weeks) after the last time power has been turned off. This period is shorter when the unit is exposed to very high humidity or used in an area with an extremely humid climate.

### 3. Change of FM/AM band step.

— 120V model —

This model is not located the band selector switch.

If the FM band step is changed from 200kHz to 50kHz, add two diodes (1SS133) to D706 and D707 on the display PC board.

If the AM band step is changed from 10kHz to 9kHz, add a diode (1SS133) to D718 on the display PC board.

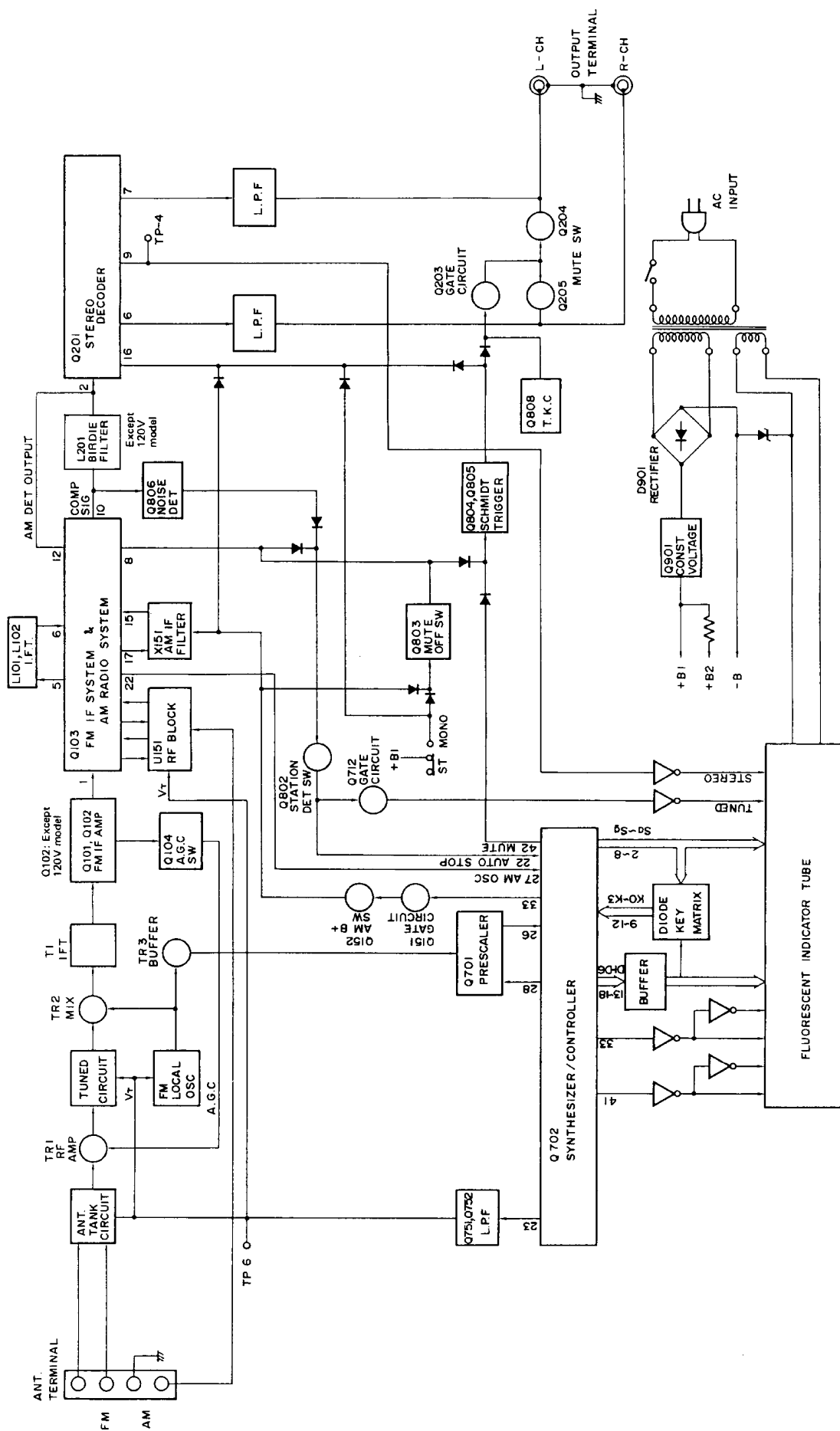
—220V model —

This model is not located the band selector switch.

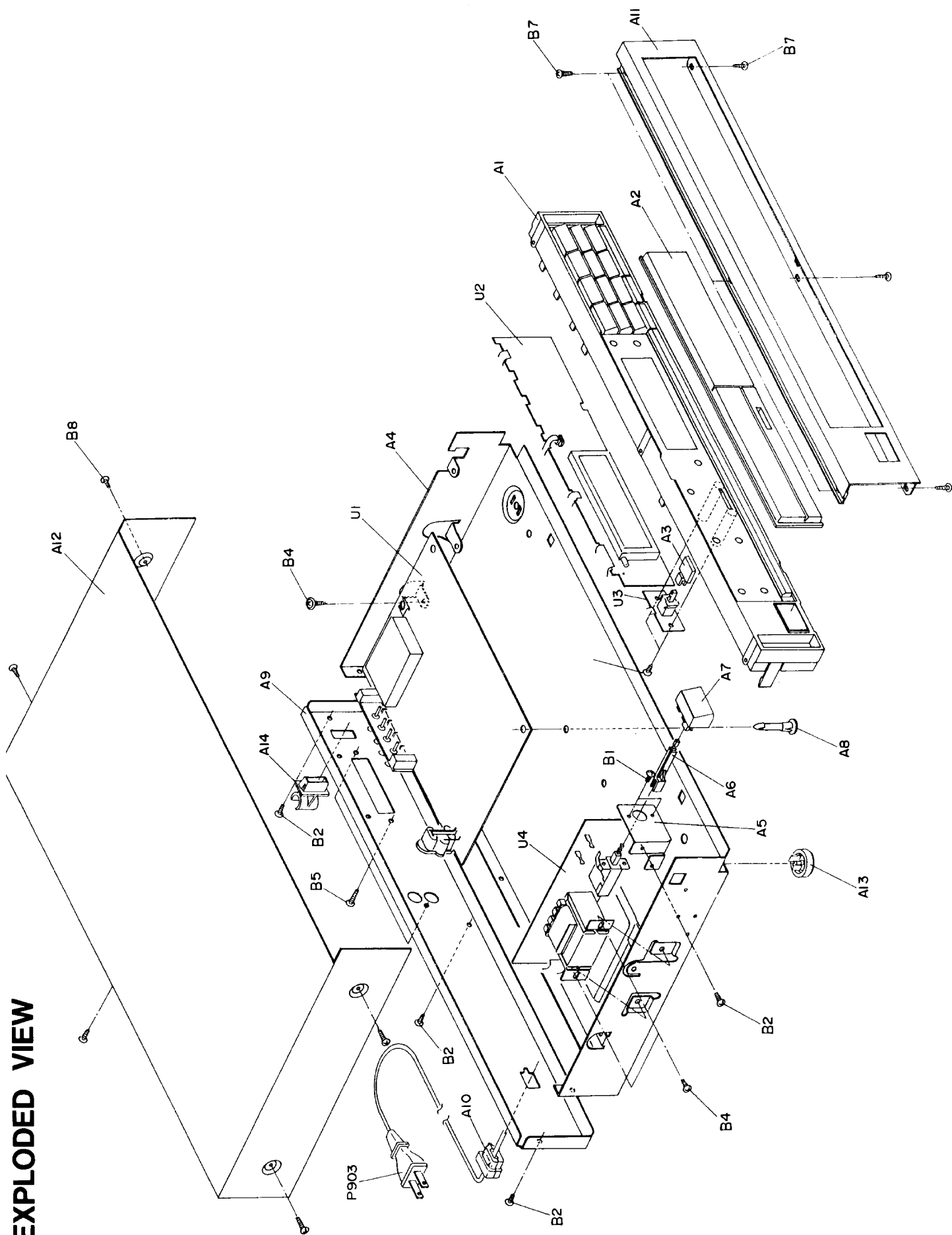
If the FM band step is changed from 50kHz to 200kHz, remove two diodes (1SS133) to D706 and D707 on the display PC board.

If the AM band step is changed from 9kHz to 10kHz, remove a diode (1SS133) to D718 on the display PC board.

## BLOCK DIAGRAM



# EXPLODED VIEW




# PARTS LIST

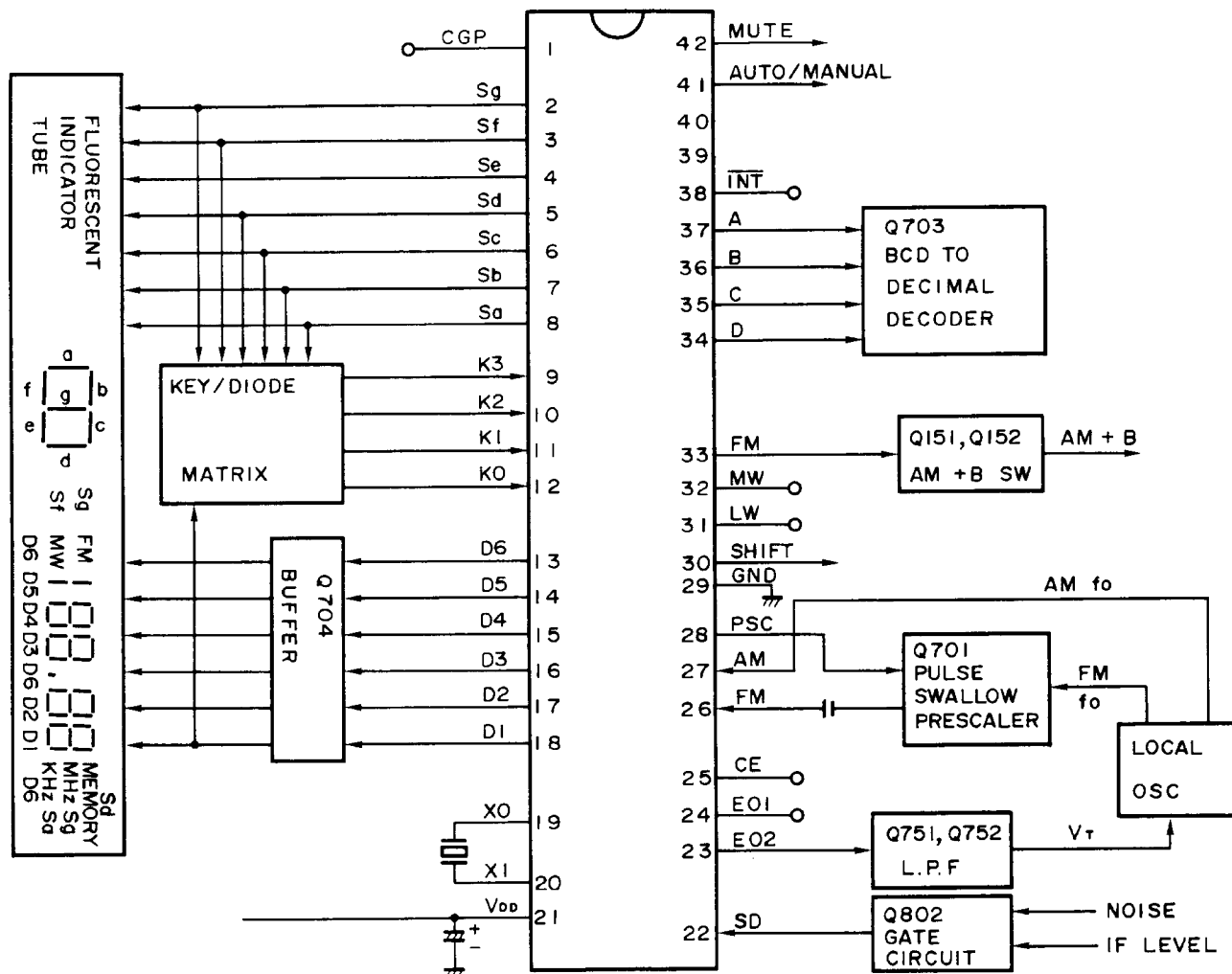
REF NO.	PART NO.	DESCRIPTION
A1	27110327B	Front bracket ass'y
A2	28191384A	Clear plate
A3	28322797	Knob PUSH
A4	27100116	Chassis
A5	27141112	Bracket, power
A6	27260170A	Joint, switch
A7	28322795A	Knob, power
A8	27190511	Holder
A9	27120955	Back panel <D>
	27120956	Back panel <G>
	27120958	Back panel <W>
	27120963	Back panel <Q>
A10	27300750	Strainrelief
A11	27210811	Front panel
A12	28184350A	Top cover
A13	27175130	Leg
A14	27190105	Holder, antenna
B1	82143006	3P+6FN(BC), Pan head screw
B2	834430068	3TTS+6B(BC), Tapping screw
B4	831130088	3TTW+8B, Tapping screw
B5	834430108	3TTS+10B(BC), Tapping screw
B7	833430080	3TTP+8P(BC), Tapping screw
B8	834430088	3TTS+8B(BC), Tapping screw
B9	838430088	3TTB+8B(BC), Tapping screw
P903	253142A or 253142	AC-UC-7#18, Power supply cord <D>
	253127A or 253129A	AS-CEE, Power supply cord <G/W>
	253118	AS-SAA, Power supply cord <Q>
S902	25065123	NSS-1258P, Voltage selector switch <W>
U1	1A034558-2	NARF-2858-2, Main circuit pc board ass'y <D>
	1A034558-2A	NARF-2858-2A, Main circuit pc board ass'y <G/Q>
	1A034558-2B	NARF-2858-2B, Main circuit pc board ass'y <W>

U2	1A046559-1	NADIS-2859-1, Display circuit pc board ass'y <D>
	1A034559-1A	NADIS-2859-1A, Display circuit pc board ass'y <G/Q>
	1A034559-1B	NADIS-2859-1B, Display circuit pc board ass'y <W>
U3	1A046560-1	NASW-2860-1, Muting switch pc board ass'y
U4	1A046561-1	NAPS-2861-1, Power supply circuit pc board ass'y <D>
	1A034561-1A	NAPS-2861-1A, Power supply circuit pc board ass'y <G>
	1A034561-1B	NAPS-2861-1B, Power supply circuit pc board ass'y <W>
	1A033561-1C	NAPS-2861-1C, Power supply circuit pc board ass'y <Q>

NOTE: <D>: Only 120V model  
<G>: Only 220V model  
<Q>: Only 240V model  
<W>: Only Worldwide model

NOTE: THE COMPONENTS IDENTIFIED BY MARK  ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PARTS NUMBER SPECIFIED.

## CIRCUIT DESCRIPTION



Pin No.	Symbol	Terminal	Description
1	CGP		Output terminal for sound "PEE".
2 - 8	Sa - Sg	Segment outputs	Display tube signal terminal output and key return signal source terminals; active high. Since these terminals can handle 30V, they are connected directly to the segment terminals of the fluorescent display tube.
9 - 12	K0 - K3	Key return signal inputs	Terminals for input of the key return signals from external matrix circuit.
13 - 18	D1 - D6	Digit outputs	Display tube digit output signal terminals; active low. D1 is used the key return signal source to diode matrix.
19, 20	X1, X2	X'tal	Connect to the 4.5MHz crystal oscillator.
21	V <sub>DD</sub>	Power source input	Device power source terminal; supplies 5V during normal operation and 2.5V from the super capacitor C701 for memory preservation.

Pin No.	Symbol	Terminal	Description
22	SD	Station detector signal input	Input terminal for detecting whether or not a broadcast signal is being received during auto-tuning. Stopped by the high level.
23, 24	E01, E02	Error outputs	Charge pump output of the phase detector with constitutes the PLL. High level is output when the divided oscillation frequency is higher than the reference frequency. In the opposite case, low level is output. Floating occurs when the frequencies match. The output is applied to the variable capacitor diode in the front end through the low pass filter Q751 and Q752. The output from both terminals is same, but only E02 is used.
25	CE	Chip enable	Device selection signal input terminal. High level ... Normal operation Low level ... Memory preservation
26	FM	FM local oscillator signal input	Input terminal for FM local oscillator is divided by 1/16 or 1/17 by prescaler Q701.
27	AM	AM local oscillator signal input	Terminal for input of the AM local oscillator signal.
28	PSC	Pulse swallow control output	This terminal outputs a signal that switches the prescaler division ratio of Q701 to 1/16 or 1/17 when the pulse swallow method is used for division. (FM only)
29	GND	Ground	
30	SHIFT	Preset reverse indication output	Terminal for indication output whether M1 – M8 or M9 – M16 the preset key. M1 – M8: Low level M9 – M16: High level
31	LW	Band switching signal outputs	Terminals for signal output switching of each band. High level is output from terminal of FM (pin no. 33) and low level is output from other terminals (pin no. 31 & 32) during FM reception.
32	MW		
33	FM		
34 35 36 37	A B C D	Preset station indication outputs	Terminals for BCD code output of preset station indicator. M1 M2 M3 M4 M5 M6 M7 M8 A 1 0 1 0 1 0 1 0 B 0 1 1 0 0 1 1 0 C 0 0 0 1 1 1 1 0 D 0 0 0 0 0 0 0 1
38	INT		Not used.
39	MEMORY	Memory down input	Terminal for down signal input of preset memory. Active low. Not used.
40	MEMORY UP	Memory up input	Terminal for up signal input of preset memory. Active low. Not used.
41	AUTO/ MANUAL	Auto/Manual indication output	Terminal for indication output whether or auto the tuning mode. This terminal becomes high during auto mode and low during manual mode.
42	MUTE	Muting output	Output terminal which mutes the shock noise occurring when the PLL is released; active high. The muting signal is output as shown below. UP/DOWN of manual/auto mode, preset memory is recalled, band switching and preset scan.

## Control key and diode matrix connections

	K3(9)	K2(10)	K1(11)	K0(12)
Sg(2)	M4/M14	M3/M13	M2/M12	M1/M11
Sf(3)	M8/M18	M7/M17	M6/M16	M5/M15
Se(4)		PRESET SCAN	M10/M20	M3/M19
Sd(5)	SHIFT	LW	MW	FM
Sc(6)	AUTO MANUAL	MEMORY	DOWN	UP
Sb(7)	HI-BLEND	DISPLAY	PROGRAM	WIDE/ NARROW
Sa(8)	*10/9kHz	*LW2	*LW1	*AM
D1(18)	*BAND 0	*BAND 1	*10/8	STATIC/ DYNA

\*Diode matrix

table 1

BAND0	BAND1	REGION	FREQUENCY RANGE	CHANNEL SPACE
D706	D707			
0	0	U.S.A.	87.9-107.9MHz	200kHz
1	1	Europe	87.50-108.00MHz	50kHz

0: Open 1: Connect the diode (1SS133).

table 2

AM	10kHz/9kHz	FREQUENCY RANGE	CHANNEL SPACE
D712	D718		
0	0	530-1620kHz	10kHz
0	1	522-1611kHz	9kHz
1	0	531-1602kHz	9kHz

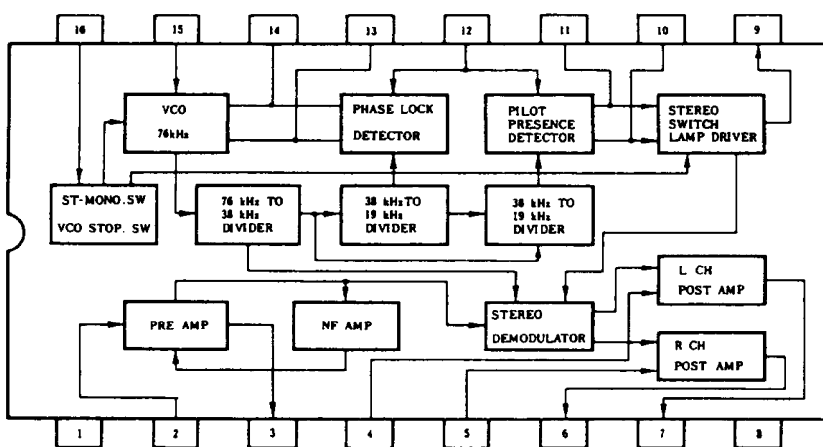
0: Open 1: Connect the diode (1SS133).

table 3

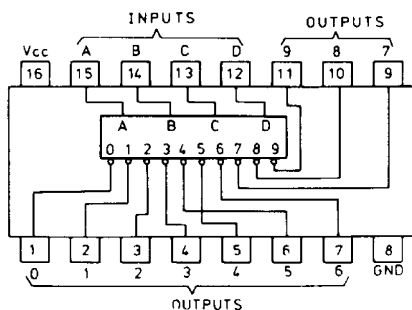
BAND0, BAND1 ..... FM band settings. See table 2.  
 10/9kHz ..... AM band settings. See table 3.

## BLOCK DIAGRAM OF IC

### μPC1161C3(Stereo decoder)

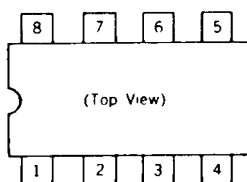


### 74LS42(BCD to decimal decoder)



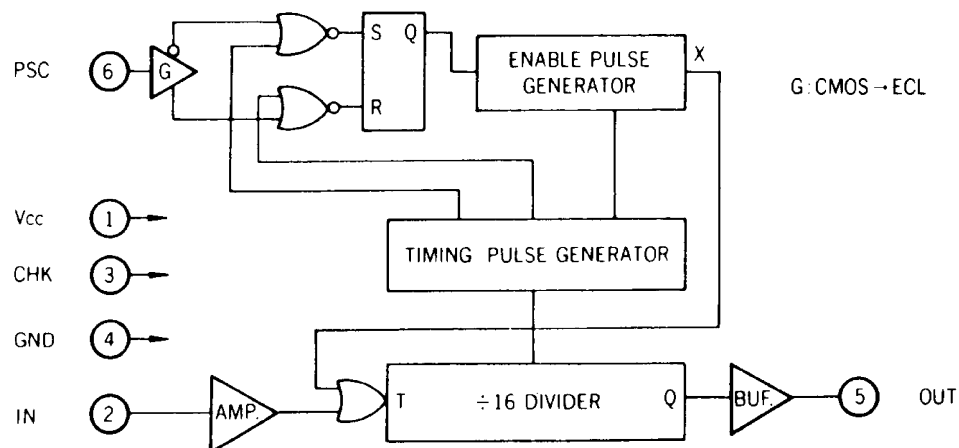
**$\mu$ PB53AC(Prescaler)**

## Pin Connection

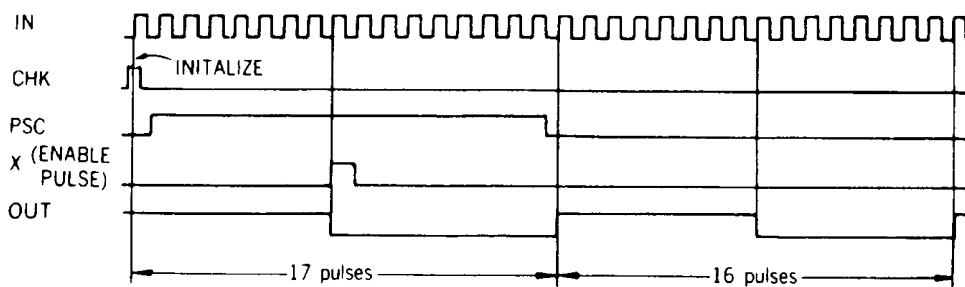
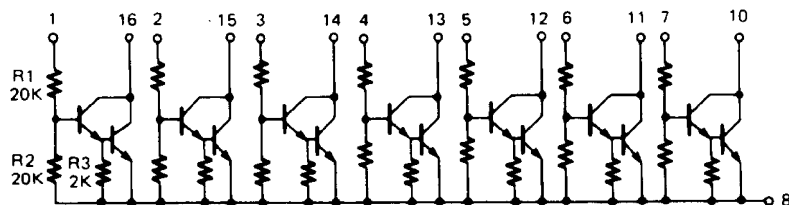


1. Pin 1 (Vcc)..... + 5 volts Supply
2. Pin 2 (IN).....FM local oscillator signal input
3. Pin 3 (CHK).....Check terminal
4. Pin 4 (GND).....Ground terminal
5. Pin 5 (OU1).....Prescaler terminal
6. Pin 6 (PSC).....Prescaler control terminal
7. Pin 7,8.....Not connected

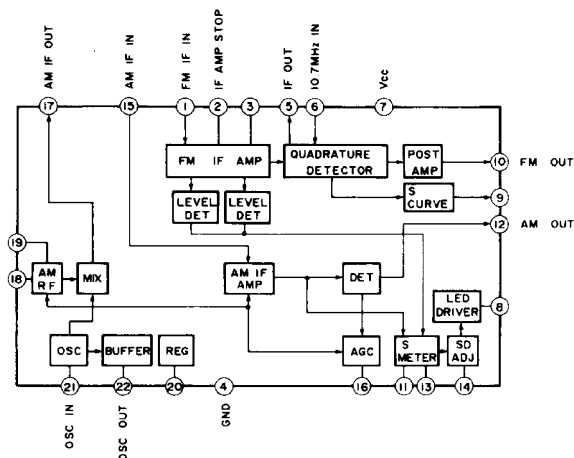
## Block Diagram



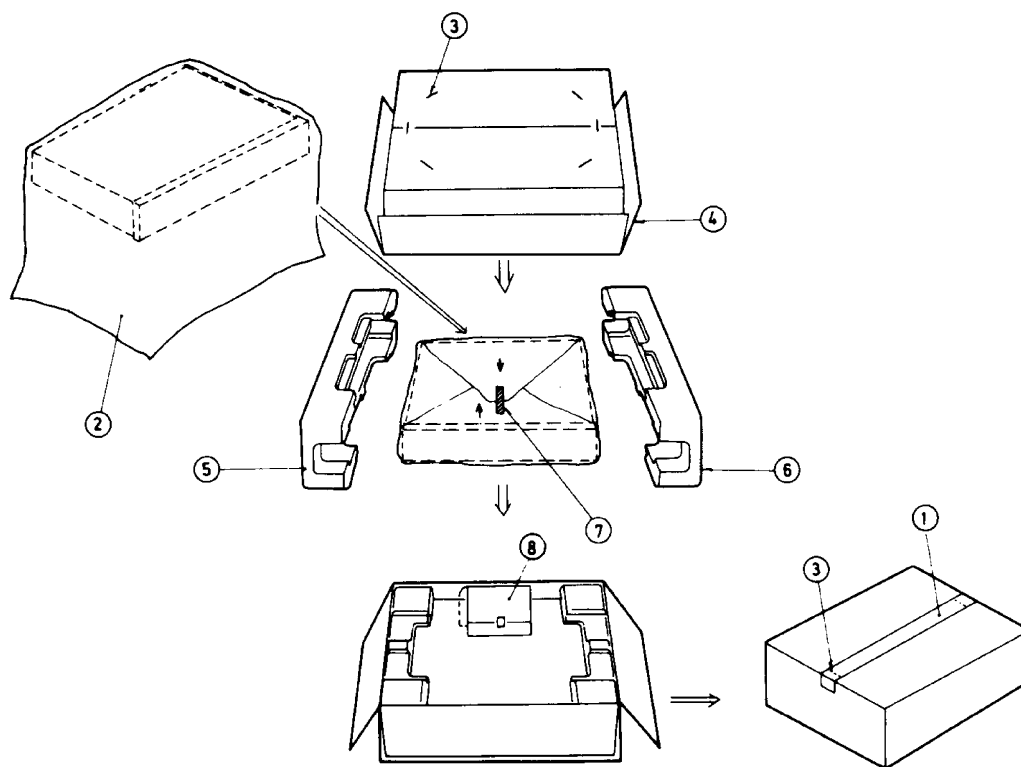
## Timing Chart

 **$\mu$ PA80C(Buffer amplifier)**

## LA1265(AM radio/FM IF system)



## PACKING VIEW



REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
1	260012	50×700mm, Dampilon tape	8	Accessory bag ass'y	
2	29100037A	650×500mm, Poly-vinyl bag	292064B	FM antenna <D>	
3	282301	Sealing hook	232119	NMA-3052, AM loop antenna	
4	29051472	Master carton box	2010098A	Connection cord	
5	29090533F	Pad R	29341126	Instruction manual <D>	
6	29090532B	Pad L	29365019	Warranty card <UDN>	
7	29110032	W=15mm, Adhesive tape	29358002E	Service station list <UDN>	
			29100006A	250×350mm, Poly-vinyl bag	
			292092	FM antenna <G/Q/W>	
			29341127	Instruction manual <G/Q/W>	
			25055018	CV-K-1, Conversion plug <W>	
			25060088	AEZ1-0050, Antenna adaptor	
				<W/Q>	

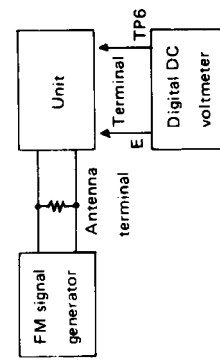
NOTE: <UDN>: Only U.S.A. model  
 <D>: Only 120V model  
 <G>: Only 220V model  
 <Q>: Only 240V model  
 <W>: Only Worldwide model

# ADJUSTMENT PROCEDURES

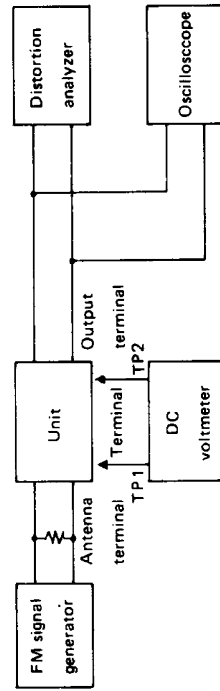
## FM section

Item	Step	Connection of instrument	FM SG output	Stereo modulator output	Tuned frequency	Output indicator	Adjustment point	Adjust for	Remarks
IF	1	Fig.2	99.1MHz 1kHz, 75kHz devi. 65dBf(60dB)		99.1MHz	DC voltmeter	L101	0V $\pm$ 20mV	Set the mode switch to MONO. Repeat the steps 1 and 2 until no further adjustment is necessary.
	2					Distortion analyzer	L102	Minimum	
Tuned indicator level		Fig.2	99.1MHz 1kHz, 75kHz devi. 17.2dBf(12dB)		99.1MHz	Tuned indicator	R101	Light on	
VCO		Fig.3	99.1MHz 1kHz, 75kHz devi. 65dBf(60dB)		99.1MHz	Frequency counter	R201	19kHz $\pm$ 10Hz	Set the mode switch to STEREO
Stereo distortion		Fig.3	99.1MHz Ext. modulation 65dBf(60dB)	L+R 1kHz 67.5kHz devi.	99.1MHz	Distortion analyzer	IF on the front end	Minimum	
						Rch. AC voltmeter Lch. AC voltmeter	R202	Minimum Minimum	Maximum and same separation
Stereo separation	1	Fig.3	99.1MHz Ext. modulation 65dBf(60dB)	Lch. 1kHz Rch. 1kHz	99.1MHz	Digital DC voltmeter		1.5 $\pm$ 0.5V	
	2							8.0 $\pm$ 0.5V	
Tuned voltage	1	Fig.1			87.9MHz (87.5MHz) 107.9MHz (108.0MHz)				
	2								

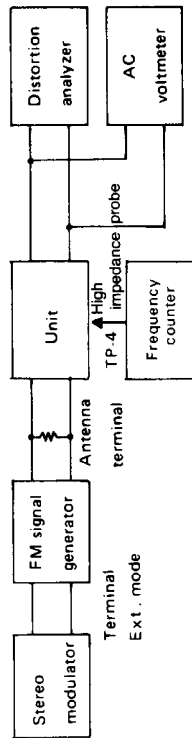
( ): 50kHz step model



<Fig.1>



<Fig.2>

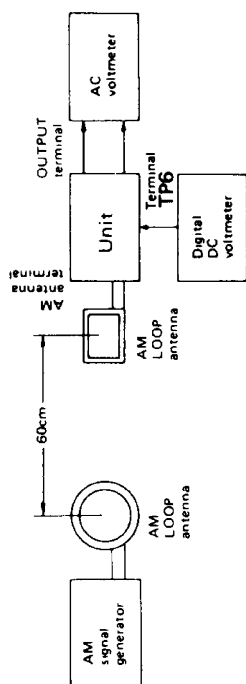


<Fig.3>

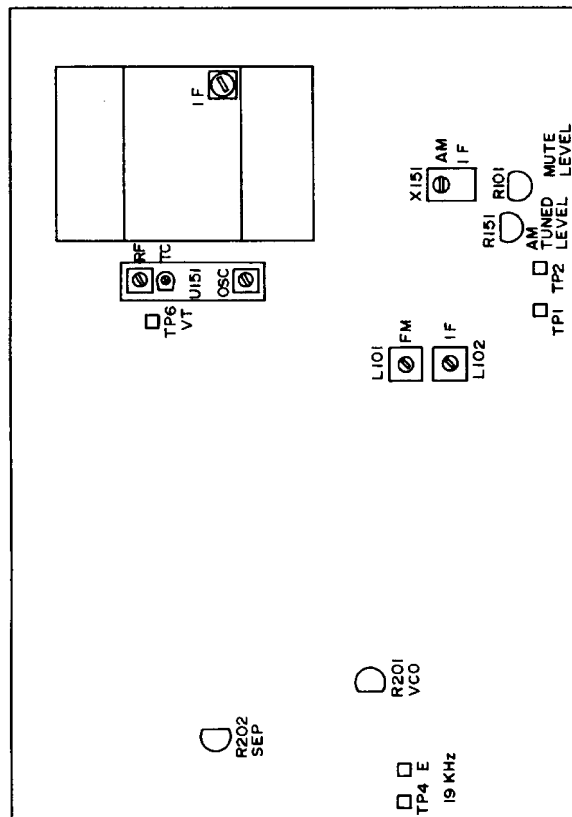
## AM section

Step	AM SG output	Tuned Frequency	Output indicator	Adjustment point	Adjust for	Remarks
1		530kHz (522kHz)	Digital DC voltmeter	OSC on U151	1.5V±0.1V	
2		1620kHz (1611kHz)			8.0±1.0V	
3	600kHz, 64dB/m (603kHz) 400Hz 30% mod.	600kHz (603kHz)	AC voltmeter	RF on U151	Maximum	Repeat the steps and 4 until no further adjustment is necessary.
4	1400kHz, 64dB/m (1404kHz) 400Hz 30% mod.	1400kHz (1404kHz)		TC on U151	Maximum	
5	1000kHz, 64dB/m (990kHz) 400Hz 30% mod.	1000kHz (990kHz)	AC voltmeter	X151	Maximum	
6	1000kHz, 64dB/m (990kHz) 400Hz 30% mod.	1000kHz (990kHz)	TUNED indicator	R151	Light on	

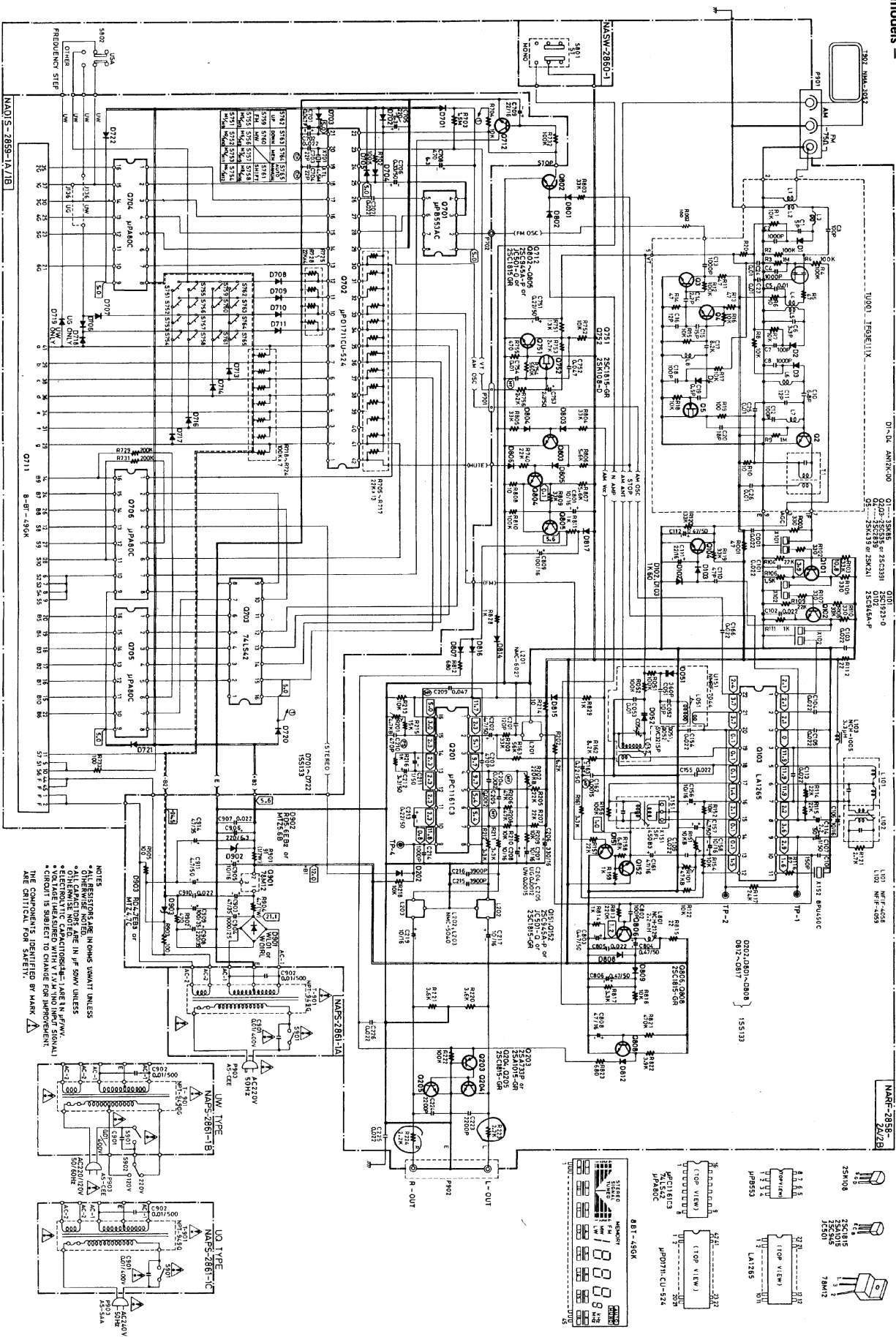
( ): 9kHz step model



(Fig.4)



— Other models —



– 120V model –



# PRINTED CIRCUIT BOARD—PARTS LIST

## MAIN CIRCUIT PC BOARD (NARF-2858-2/2A/2B)

CIRCUIT NO.	PART NO.	DESCRIPTION
TU001	<b>Front end</b>	
	240070	TFFG1U116A <D>
	240072	TFFG3E111X <G/Q/W>

Q101	<b>Transistors</b>	
	2211723	2SC1923(O)
	2210746	2SC945A(P) <G/Q/W>
	2211255 or	2SC1815(GR) or
	Q102	2SC945A(P)
	2210746	2SA1015(GR) or
	Q151, Q152	2SA733(P)
	Q203	2SC1815(GR)
	2211455 or	2SC1815(GR)
	2210803	2SK108(D)
Q204, Q205	2211255	2SC1815(GR) or
	Q751	2SC945A(P)
	2211255	2SC1815(GR)
	Q752	2SC1815(GR) or
Q802-Q805	2212294	2SC945A(P)
	2211255 or	2SC1815(GR)
Q806, Q808	2210746	
	2211255	

Q103	<b>ICs</b>	
	222912	LA1265
	222678	μPC1161C3
Q901	222780122	78M12

D102, D103	<b>Diodes</b>	
	223132	1K60
	D202, D812	1SS133
	D801-D809	1SS133
	D814-D817	1SS133
	D901	WL01 or
	223890	W01RL
	D902	2239472 or
	2243152	RD5.6EB2 or
	D903	MTZ5.6B
	2243133 or	MTZ4.7C or
	2239433	RD4.7EB3

L101	<b>Transformers</b>	
	233370	NFIF-4058
L102	233371	NFIF-4059

L103	<b>Coils</b>	
	233105	NCH-1005
	L201	NMC-6027 <G/Q/W>
	L202, L203	NMC-5040 <G/Q/W>
L801	231081	NCH-2129

U151	<b>RF Block</b>	
	232133	NMRF-7044

X101, X102	<b>Filters</b>	
	3010071	SFE10.7MA5 <D>
	X101-X103	SFE10.7MM <G/Q/W>
	X151	SFL-450B3
	X152	BFU-450C
Z201, Z202	3020016	B3XN4123-32N <D>

C106	<b>Capacitors</b>	
	354741009	10μF, 16V, Elect.
	C107	1μF, 50V, Elect.
	C111	354742209
	C112	22μF, 16V, Elect.
	C114	0.47μF, 50V, Elect.
	C156	2.2μF, 50V, Elect.
	C157	10μF, 16V, Elect.
	C158	4.7μF, 50V, Elect.
	C161	10μF, 16V, Elect.
	C163	47μF, 16V, Elect.
	C202	0.22μF, 50V, Elect.
	C206	4.7μF, 50V, Elect.
	C207, C208	330μF, 16V, Elect.
	C210	10μF, 16V, Elect.
	370134714	470pF ±5%, 100V, APS

C211	354780109	1μF, 50V, Elect.
C212	354780339	3.3μF, 50V, Elect.
C213	354782299	0.22μF, 50V, Elect.
C217, C219	354741009	10μF, 16V, Elect.
C751	354782299	0.22μF, 50V, Elect.
C753	354780229	2.2μF, 50V, Elect.
C801	354741009	10μF, 16V, Elect.
C803, C804	354784799	0.47μF, 50V, Elect.
C806	354784799	0.47μF, 50V, Elect.
C808	354744709	47μF, 16V, Elect.
C809	354741019	100μF, 16V, Elect.
C903	354764709	47μF, 35V, Elect.
C904	354751029	1000μF, 25V, Elect.
C905	354741009	10μF, 16V, Elect.
C906	354722219	220μF, 6.3V, Elect.
C908	354762219	220μF, 35V, Elect.
C909	354761019	100μF, 35V, Elect.
C911	354780479	4.7μF, 50V, Elect.
C914	354764709	47μF, 35V, Elect.

R101	<b>Resistors</b>	
	5210068	N06HR47KBD, Semi-fixed
	R151	N06HR10KBD, Semi-fixed
	R201	N06HR4.7KBD, Semi-fixed
	R202	N06HR220KBD, Semi-fixed
R901	442529104	91ohm, 1/2W, Metal oxide film
R904	441620474	4.7ohm, 1W, Metal oxide film

P901	<b>Terminals</b>	
	25060085	NTM-4PDMN29, Antenna <D>
P902	25060087	NTM-2PDMN31, Antenna
		<G/Q/W>
	25045182	NPJ-2PDBL72, Output <D>
	25045211	NPJ-2PDBL91, Output
		<G/Q/W>

P701	<b>Sockets</b>	
	2000643A	NSAS-4P559
P702	2000673	NSAS-6P629

27160176	<b>Radiator</b>	
		RAD-56

82143006	<b>Screw</b>	
		3P+6FN(BC), Pan head

27141059	<b>Bracket</b>	
		Ground

S802	<b>Switch</b>	
	25065286	NSS-22112, Band selector <W>

## DISPLAY CIRCUIT PC BOARD (NADIS-2859-1/1A/1B)

CIRCUIT NO.	PART NO.	DESCRIPTION
-------------	----------	-------------

Q701	<b>ICs</b>	
	222619	μPB553AC
	Q702	μPD1711CU-524
	Q703	74LS42
Q704-Q706	222801	μPA80C

Q712	<b>Transistor</b>	
	2211255 or	2SC1815(GR) or
	2210746	2SC945A(P)

Q711	<b>Fluorescent indicator tube</b>	
	212037	8-BT-49GK

X701	<b>Crystal</b>	
	3010091	XTL-4.5M

D701-D705	<b>Diodes</b>	
	223163	1SS133

D706, D707	223163	1SS133 <G/Q/W >
D708-D711	223163	1SS133
D713, D714	223163	1SS133
D716, D717	223163	1SS133
D718	223163	1SS133 <G/Q>
D719	223163	1SS133 <W>
D720-D722	223163	1SS133

**Capacitors**

C701	3020027 or 3000050	0.047F, 5V or 0.047F, 5.5V, Super
C705	354722219	220 $\mu$ F, 6.3V, Elect.
C706	354783399	0.33 $\mu$ F, 50V, Elect.
C708	354724719	470 $\mu$ F, 6.3V, Elect.
C709	354742209	22 $\mu$ F, 16V, Elect.

**Resistors**

R705-R717	49163223413	22kohmX13, 1/10W, Network
R718-R724	49163104407	100kohmX7, 1/10W, Network
R725-R728	49163223404	22kohmX4, 1/10W, Network

**Switches**

S751-S765	25035548	NPS-111-S510, Push
-----------	----------	--------------------

**MUTING SWITCH PC BOARD (NASW-2860-1)**

CIRCUIT NO.	PART NO.	DESCRIPTION
S801	25035537	NPS-122-L499, Push switch

**POWER SUPPLY CIRCUIT PC BOARD  
(NAPS-2861-1/1A/1B/1C)**

CIRCUIT NO.	PART NO.	DESCRIPTION
	2300177	$\triangle$ NPT-949D, Power transformer <D>
	2300178	$\triangle$ NPT-949G, Power transformer <G>
	2300179	$\triangle$ NPT-949DG, Power transformer <W>
	2300188	$\triangle$ NPT-949Q, Power transformer <Q>
C901	3500065A	$\triangle$ 0.01 $\mu$ F, AC400V/125V,
	<b>Capacitor IS</b>	
R905	431523355	$\triangle$ 3.3Mohm, 1/2W, Solid resistor <D>
S901	25035558	$\triangle$ NPS-111-L520P, Power switch

NOTE: THE COMPONENTS IDENTIFIED BY MARK  $\triangle$  ARE  
CRITICAL FOR RISK OF FIRE AND ELECTRIC  
SHOCK. REPLACE ONLY WITH PART NUMBERS  
SPECIFIED.

**ONKYO CORPORATION**

International Division: No. 24 Mori Bldg., 23-5, Nishi-Shimbashi 3-chome, Minato-ku,  
TOKYO 105, JAPAN Tel: 03-432-6987 Fax: 03-436-6979 TLX: 242-3551 ONKYO J  
**ONKYO U.S.A. CORPORATION**  
200 Williams Drive, Ramsey, N.J. 07446, U.S.A. Tel: 201-825-7950 Fax: 201-825-8150